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AMSAT NEWS SERVICE
ANS-316

The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT North America, The Radio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in Space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

The news feed on http://www.amsat.org publishes news of Amateur Radio in Space as soon as our volunteers can post it.

Please send any amateur satellite news or reports to:
ans-editor at amsat.org.

You can sign up for free e-mail delivery of the AMSAT News Service Bulletins via the ANS List; to join this list see:
http://www.amsat.org/mailman/listinfo/ans

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ANS-316 AMSAT News Service Weekly Bulletins

AMSAT News Service Bulletin 316.01
From AMSAT HQ KENSINGTON, MD.
DATE November 12, 2017
To All RADIO AMATEURS
BID: $ANS-316.01

AMSAT RadFxSat/Fox-1B Launch Delay - New Plan NET November 14

United Launch Alliance (ULA) announced on November 6 that the launch of the Delta II rocket carrying RadFxSat has been delayed due to a faulty battery on the booster. The launch is now scheduled for Tuesday, November 14th at 09:47 UTC. NASA TV coverage begins at 09:15 UTC.

Web streaming will be available on www.nasa.gov/ntv - launches are also often streamed at http://www.ulalaunch.com and spaceflightnow.com

Continue reading for what you can expect after the launch and how you can help ...

INTRODUCTION

RadFxSat is a partnership with Vanderbilt University ISDE and hosts four payloads for the study of radiation effects on commercial off the shelf components. RadFxSat features the Fox-1 style FM U/v repeater with an uplink on 435.250 MHz (67.0 Hz CTCSS) and a downlink on 145.960 MHz. Satellite and experiment telemetry will be downlinked via the "DUV" subaudible telemetry stream and can be decoded with the FoxTelem software:
https://www.amsat.org/foxtelem-software-for-windows-mac-linux/ .

LAUNCH AND EARLY ORBIT PHASE (LEOP)

At this time, pre-launch Keplerian elements are not expected to be available. However, based on the Local Time of the Ascending Node (LTAN) of the primary payload, 13:30, stations should expect to have their initial ascending passes starting around noon local time.

The estimated time of "First Veronica," the initial beacon after deployment, is 12:07 UTC. Due to the tight constraints on the primary payload deployment, the secondary payloads may be delayed slightly, so this should be considered the soonest the transmitter will be enabled.

Orbital elements will be published as soon as they are available on the AMSAT website. Stations in Europe, South America, and North America should point your beams south and have FoxTelem running while awaiting the initial post-launch Keplerian elements.

Participation in telemetry collection by as many stations in as many parts of the world as possible is essential as AMSAT Engineering looks for successful startup and indications of the general health and function of the satellite as it begins to acclimate to space.

If you are capturing telemetry with FoxTelem please be sure that "Upload to Server" is checked in your settings, and that your "Ground Station Params" are filled in as well. You can help AMSAT and everyone waiting to get on the air with RadFxSat tremendously by capturing RadFxSat telemetry.

About 60 minutes after deployment, or 140 minutes after launch, the satellite will start up in Beacon Mode. In this initial mode, the transmitter is limited to 10 seconds on time and then will be off for two minutes. For those of you capturing telemetry, that means that you will only see Current frames and no High or Low frames. The High and Low frames are truncated as it takes just over the 10 second limit to send two frames. Veronica may also be cut off before she gets to say her whole ID string as the full ID, "RadFxSat Fox-1B Safe Mode," is a bit longer than the approximately 3.5 seconds she has in Beacon Mode. If the voice ID is cut off, the satellite is still in Beacon Mode.

If AMSAT Engineering is seeing nominal values from the telemetry you gather, the satellite will be commanded from Beacon Mode to Safe Mode on the first good pass over the United States. In Safe Mode, the satellite transmits a full two frames of telemetry (one Current frame followed by, and alternating each ID cycle, a High or a Low frame). Veronica now has time to make the whole ID announcement in Safe Mode.

The on-orbit checkout procedure for RadFxSat is similar to Fox-1A/AO-85 and could be completed in as little as a few days if users cooperate. It is very important, and good amateur operating practice, to refrain from using the transponder uplink so the on-orbit tests can be performed, including when the satellite is switched into Transponder Mode for testing.

AMSAT will make it broadly known when the tests are complete and the transponder is available for all to use. If you hear someone on the transponder, please do not assume that it is open for general use - check AMSAT's website, Facebook, and Twitter before transmitting to be sure you do not interfere with testing.

AMSAT asks all satellite operators to contribute just a little bit of your time by gathering telemetry, not using the transponder uplink, to help complete the last few days of getting RadFxSat operating for the amateur radio community.

Lots of hams put thousands of volunteer hours of their time into making RadFxSat happen. Just like any ham radio project you might undertake, AMSAT builds satellites. AMSAT volunteers do it because they like to, and when they are done, AMSAT freely shares their project with hams everywhere as is the spirit of amateur radio.

Thank you very much and see you on the bird!

RADIO PROGRAMMING CHART

RadFxSat (Fox-1B) Doppler Shift Correction

Memory 1 (AOS) - TX 435.240 MHz (67.0 Hz Tone), RX 145.960 MHz
Memory 2 (Rise) - TX 435.245 MHz (67.0 Hz Tone), RX 145.960 MHz
Memory 3 (TCA) - TX 435.250 MHz (67.0 Hz Tone), RX 145.960 MHz
Memory 4 (Descend) - TX 435.255 MHz (67.0 Hz Tone), RX 145.960 MHz
Memory 5 (LOS) - TX 435.260 MHz (67.0 Hz Tone), RX 145.960 MHz

Frequencies are subject to change post-launch.

[ANS thanks AMSAT Vice-President Engineering, Jerry Buxton, NØJY, for the above information]

FoxTelem V.1.05 Available for Download - Including Update Patch

Given the United Launch Alliance Delta II launch delay to November 14 you have time to download and install AMSAT's FoxTelem Version 1.05 telemetry capture, decoding, and data warehousing software so your ground station can participate and assist during the commissioning of RadFxSat/Fox-1B.

If you have already installed FoxTelem Version 1.05w in preparation for RadFxSat it is recommended that you install an update patch. This will upgrade you to 1.05x.

This patch fixes the following bugs with v1.05w or earlier 1.05 releases:

* When two spacecraft are tracked and "When Above Horizon" is set to start and stop the decoder, the decoder NEVER starts.
* If the matched filter is selected for DUV then FoxTelem crashes
* When a spacecraft is being decoded, the position is not updated on the screen
* When the decoders is automatically stopped/started, then the FunCube Dongle becomes disconnected

To apply this patch simply copy the jar file into your Version 1.05 installation directory and overwrite the existing file.

If you are running FoxTelem Version 1.04f or earlier, you should install

the full release for Version 1.05x

The files for the full release and the update patch are here:
http://amsat.us/FoxTelem/windows/
http://amsat.us/FoxTelem/linux/
http://amsat.us/FoxTelem/mac/

The download package includes the latest version of the FoxTelem User Guide.

[ANS thanks Chris, G0KLA/AC2CZ for the above information]

RadFxSat Telemetry Reception Challenge

Get FoxTelem set up and ready to go on Tuesday! The first amateur radio operator that successfully receives RadFxSat (Fox-1B) telemetry and uploads it to the AMSAT server will receive a commemorative 3D printed QSL card.

RadFxSat is scheduled for launch at 1:47am PST (09:47 UTC) on Tuesday, November 14th from Vandenberg Air Force Base, California. The first transmission from RadFxSat is expected to occur around 12:07 UTC. Due to a lack of prelaunch Keplerian elements, it is not known exactly where the satellite will be when it makes it's first transmission.

For further details regarding the Launch and Early Orbit Phase (LEOP) of RadFxSat operations, please see:
https://www.amsat.org/getting-ready-for-radfxsat-fox-1b/

[ANS thanks Paul N8HM for the above information]

Special Membership Offer for RadFxSat Launch

As part of the preparations for the launch of RadFxSat on November 10th, AMSAT is making our "Getting Started With Amateur Satellites" book available for a limited time as a download with any paid new or renewal membership purchased via the AMSAT Store. This offer is only available with purchases completed online, and for only a limited time. A perennial favorite, Getting Started is updated every year with the latest amateur satellite information, and is the premier primer of satellite operation. The 182 page book is presented in PDF format, in full color, and covers all aspects of making your first contacts on a ham radio satellite.

Please take advantage of this offer today by visiting the AMSAT store at https://www.amsat.org/shop/ and selecting any membership option. While there, check out our other items, including the M2 LEOpack antenna system, Arrow antennas, AMSAT shirts, and other swag.

Thank you, and see you soon on RadFxSat!

[ANS thanks Paul N8HM for the above information]

Fox-1D Integrated, Ready for Launch

While RadFxSat (Fox-1B) is just days from launch, preparations for the launch of the next Fox-1 satellite are already underway. On Monday, November 6th, AMSAT Vice-President Engineering Jerry Buxton, N0JY,

delivered
Fox-1D to Spaceflight, Inc. in Seattle, WA where it was integrated into its Innovative Solutions in Space QuadPack for delivery to India. Fox-1D will launch on the next ISRO Polar Satellite Launch Vehicle (PSLV) flight, scheduled to take place by the end of December.

In addition to the Fox-1 U/v FM transponder, Fox-1D carries several university experiments, including a MEMS gyro from Pennsylvania State University–Erie, a camera from Virginia Tech, and the University of Iowa's HERCI (High Energy Radiation CubeSat Instrument) radiation mapping experiment. Fox-1D also carries the AMSAT "L-Band Downshifter" giving the option of utilizing a 1.2 GHz uplink for the FM transponder.

Fox-1D

Uplink: 435.350 MHz FM / 1267.350 FM MHz * (67 Hz CTCSS)
Downlink: 145.880 MHz FM
* Switchable by command station. Not operational simultaneously.

Read the full article, including photos, on the AMSAT web:
https://www.amsat.org/fox-1d-integrated-ready-for-launch/

[ANS thanks Paul Stoetzer, N8HM for the above information]

NASA ELaNa XX Mission Launching RadFxSat-2/Fox-1E Set for NET End of Q1 2018

AMSAT has been informed that the launch for the NASA Educational Launch of Nanosatellites (ELaNa) XX mission carrying RadFxSat-2 (Fox-1E) is now scheduled "No Earlier Than" (NET) the end of Q1, 2018.

In addition to RadFxSat-2, the ELaNa XX mission will carry 12 CubeSats constructed both by NASA and several universities around the United States. The mission will be launched by Virgin Galactic on their LauncherOne air launch to orbit system from Mojave, CA

RadFxSat-2, like RadFxSat (Fox-1B), is a partnership opportunity between the Vanderbilt University Institute for Space and Defense Electronics and AMSAT and will carry a similar radiation effects experiment, studying new FinFET technology.

RadFxSat-2 will be the fifth Fox-1 satellite built by AMSAT. Fox-1A, now AMSAT-OSCAR 85 (AO-85), was launched on October 8, 2015 and is fully operational, providing science data from it's onboard experiments and FM transponder service for the amateur radio community. Fox-1Cliff and Fox-1D are scheduled for launch soon. RadFxSat/Fox-1B is scheduled to launch November 10, 2017.

The RadFxSat-2 spacecraft bus will be built on the Fox-1 series but will feature a linear transponder "upgrade" to replace the standard FM transponder in Fox-1A through D. In addition, the uplink and downlink bands will be reversed from the previous Fox satellites in a Mode V/u (J) configuration using a 2 meter uplink and 70 cm downlink. The downlink will feature a 1200 bps BPSK telemetry channel to carry the Vanderbilt science data in addition to a 30 kHz wide transponder for amateur radio use.

[ANS thanks the AMSAT Engineering and Operation Teams for the above information]

Donate to AMSAT Tax-Free From Your IRA

Are you over 70-1/2 years of age and need to meet your IRA's Required Minimum Distribution for 2017? Consider making a donation to AMSAT!

Under the Protecting Americans from Tax Hikes Act of 2015, individuals over 70-1/2 years of age may make direct transfers of up to $100,000 per year from a traditional IRA to an eligible charity without increasing their taxable income. Consult your tax advisor or accountant to make certain you are eligible.

AMSAT is a 501(c)(3) not-for-profit educational and scientific organization whose purpose is to design, construct, launch, and operate satellites in space and to provide the support needed to encourage amateurs to utilize these resources. AMSAT's federal tax ID is 52-0888529.

[ANS thanks the AMSAT Board of Directors for the above information]

November 15 Deadline for U.S. Proposals for ARISS Contacts

Reminder - November 15 deadline! The Amateur Radio on the International Space Station (ARISS) program is seeking proposals from U.S. schools, museums, science centers and community youth organizations to host radio contacts with an orbiting crew member aboard the International Space Station (ISS) between July 1 and December 31, 2018. See ARISS website for additional details on expectations, proposal guidelines, and the proposal form: http://www.ariss.org/hosting-an-ariss-contact-in-the-us.html

[ANS thanks ARISS for the above information]

D-Star ONE Launch on November 28

D-Star ONE is the first private German CubeSat and the first D-Star communication spacecraft wordwide.

D-Star ONE will be launched on November 28, 2017 from Vostochny launch site jointly with the Meteor-M ?2-1 mission of the Russian State Space Corporation ROSCOSMOS. Final launch preparations are currently being performed.

D-Star repeater & beacon frequencies:
Uplink: 437.325MHz
Downlink: 435.525MHz
RF-Power: 800mW

Additional information will be posted at: http://www.d-star.one/

Spaceflightinsider.com published an article about successful final testing on D-Star ONE: http://tinyurl.com/ANS-316-Spaceflightinsider www.spaceflightinsider.com)

[ANS thanks AMSAT-UK and the D-Star ONE team for the above information]

November Satellite Activity Planned for HC8 Galapagos DXpedition

HC8, GALAPAGOS ISLANDS. An Argentinian group will be active as

HC8LU from San Cristobal Island in the Galapagos Islands between November 29 to December 8, 2017.

Operators include Alejandro/LU8YD, Alejandro/LU9VEA, Mario/LU7VB, and Patricio/LU3YK. Pilot stations are Sergio/LU7YS and Javier/LU5FF.

Activity will be on 160-10 meters using mainly SSB and Digital modes (WSPR, JT65, FT8, PSK31). Also operations on the satellites (LEO, FM and SSB). QSL via IK2DUW.

Visit their Blog page for updates, at: https://hc8lu.blogspot.com.ar

[ANS thanks the Ohio/Penn DX Bulletin No. 1331 for the above information]

Satellite Shorts From All Over

+ Ever since the launch of OSCAR I in 1961, it has been traditional for amateur radio satellites to carry the name OSCAR, for "Orbiting Satellite Carrying Amateur Radio." At the request of the original Project OSCAR organization, AMSAT-NA now administers the numbering of OSCAR satellites. In anticipation of adding a new OSCAR on Tuesday, a listing of all 90 satellites that have received OSCAR designations has been posted to the AMSAT website at: https://www.amsat.org/orbiting-satellites-carrying-amateur-radio/

+ During launch and early operations phases of a cubesat deployment many satellite operators participate in an unofficial Internet Relay Chat (IRC) #cubesat channel on the Freenode network. IRC clients include Nettalk, mIRC, the ChatZilla plugin for Firefox browser. A web based connection is available at: https://webchat.freenode.net (Nickname = Callsign; Channels = #cubesat) More information about the Freenode network is posted at: https://freenode.net

+ Damon, WA4HFN says congratulations are due to Al, XE2AT for his triple award winner for earning the following Squirt the Birds awards:
  o Grid Master #6
  o 5 in EM55 #61
  o Got Grids? #18
  These awards are free and we at Squirt the Birds support AMSAT NA
  Go to www.squirtthebirds.com for more info.

+ An article, "CubeSats are challenging" by Charles Phillips on 'The Space Review' at http://www.thespacereview.com/article/3364/1 offers university cubesat teams advice we already know ... "One good resource could be the busy amateur community that likes to listen for the downlink of satellites: a developer probably should have some amateurs lined up to listen just in case they are needed."

+ The Sun-Sentinel newspaper printed an article about the November 6 ARISS contact with the South Florida Science Center in West Palm Beach with Italian astronaut Paolo Nespoli: http://tinyurl.com/ANS-316-SunSentinelARISS (www.sun-sentinel.com)

+ The Chertsey Radio Club got some good publicity for both amateur radio and the FUNcube-1 (AO-73) satellite in the Heathrow Villager newspaper published on November 4, 2017. During the JOTA event the FUNcube-1 satellite transmitted a special Fitter Message from Space that the Scouts successfully decoded: http://tinyurl.com/ANS-316-AMSATUK-Scouts (www.amsat-uk.org)

+ The November edition of the AMSAT-EA newsletter (in Spanish) is now

available for download https://www.amsat-ea.org/contenidos/ -and, a PDF file in English: http://tinyurl.com/ANS-316-AMSATEA-English (amsat-ea.org)

+ Masa, JN1GKZ, informs us from Tokyo that JAXA is preparing for the deployment of NRCSD#13 from the ISS in the November 16-17 timeframe. NRCSD#13 includes the ELaNa XXII CubeSats: ASTERIA, Dellingr/RBLE, and OSIRIS-3U. OSIRIS-3U will transmit on 437.505 MHz with GMSK data rates up to 38k4. The cubesats were delivered by Dragon CRS-12 in August, 2017.

+ On November 13, Venus and Jupiter will rise together in the morning sky shortly before sunrise. Venus and Jupiter will come within a mere 17 arcminutes of each other, and remain close for a day before and after the conjunction itself. (Reminder: Your fist held at arm's length measures about 10 degrees across. There are 60 arcminutes in 1 degree.) The two planets will be visible in the constellation Virgo, west of the waning crescent moon, which will be higher in the sky. Observers should look just south of east; the planets will be rising almost exactly ahead of the sun. https://www.space.com/33792-venus-jupiter-conjunction.html

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In addition to regular membership, AMSAT offers membership in the President's Club. Members of the President's Club, as sustaining donors to AMSAT Project Funds, will be eligible to receive additional benefits. Application forms are available from the AMSAT Office.

Primary and secondary school students are eligible for membership at one-half the standard yearly rate. Post-secondary school students enrolled in at least half time status shall be eligible for the student rate for a maximum of 6 post-secondary years in this status. Contact Martha at the AMSAT Office for additional student membership information. And, with that consider the tale of the superconductor who walks into a bar. The bartender says, "Get out! We don't serve your kind here." The superconductor left without resistance.

73,
This week's ANS Editor,
JoAnne Maenpaa, K9JKM
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